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Discoid Double-layered Lateral Meniscus: A Case Report

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Learning Point of the Article:

In this report, we present a new type of double-layered meniscus that has not been described in the literature before.

Abstract

Introduction: Abnormalities of the double-layered meniscus are rare and can be difficult to diagnose. The main pathology in this abnormality, which is predominantly seen in the lateral compartment, is an accessory meniscus lying over the normal meniscus. Anatomically, this structure can appear in different forms. Although other meniscal abnormalities associated with a double-layered meniscus have been reported, this case presents a previously undescribed type in the literature.

Case Report: A 12-year-old girl presented to our clinic with complaints of knee locking and pain. When the patient underwent arthroscopy, an accessory incomplete discoid meniscus was found overlying the normal lateral meniscus. We performed an excision of the upper accessory meniscus and the patient had no problems during 3 years of follow-up after surgery.

Conclusion: Abnormalities of the lateral meniscus are rare and can be difficult to diagnose. In cases where we suspect a meniscal abnormality, a proper arthroscopic examination should be performed and if a discoid meniscus is seen, it should be considered that this may be a double-layered meniscus.

Keywords: Double-layered meniscus, discoid meniscus, lateral meniscus abnormalities, knee arthroscopy.

Introduction

Abnormalities of the meniscus are rare in the general population and tend to occur in the lateral meniscus [1]. They can cause a range of symptoms such as pain, swelling, and locking due to changes in the structure of the knee joint. Several types of meniscal abnormalities can present in the knee joint, including the most common form, discoid meniscus, as well as less common forms such as ring-shaped meniscus, Wrisberg meniscus, and double-layered meniscus [1, 2]. A review of the literature has shown that only a small number of cases of double-layered meniscus have been documented [3]. In this report, we present a new type of double-layered meniscus that has not been described in the literature before.

The patient and her family were informed that data concerning their case would be submitted for publication and they provided consent.

Case Report

A 12-year-old girl complained of knee pain and clicking that had persisted for 3 months without trauma. Physical examination of the patient revealed limited extension (range of motion is

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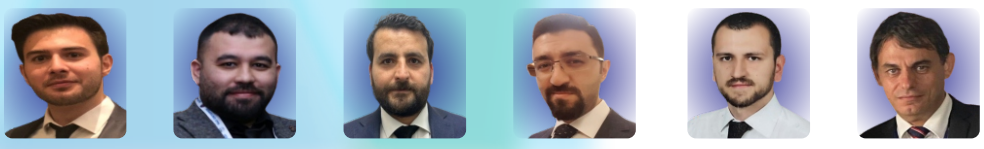

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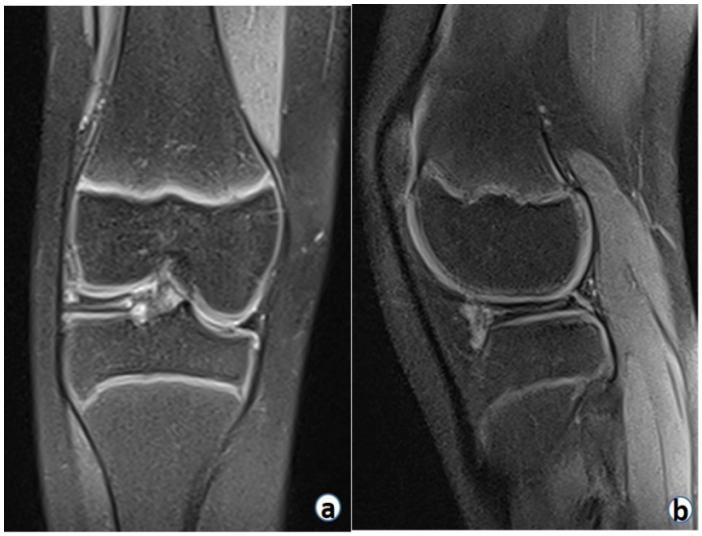

Figure 1: T2-weighted magnetic resonance (MR) images of the knee show an enlarged lateral joint space and high signal intensity on coronal (a) and sagittal (b) MR images.

20°–135°) and a positive McMurray test on the lateral side. An enlarged lateral joint space with high signal intensity in the region of the lateral meniscus was observed on magnetic resonance imaging (MRI) (Fig. 1). On arthroscopic visualization of the knee joint, the first structure observed was an incomplete discoid meniscus with inflammation and central vascularization (Fig. 2a). When the central part of this structure was excised, an accessory meniscus was observed overlying the normal lateral meniscus (Fig. 2b). While the posterior part of the accessory meniscus was connected to the underlying normal meniscus, there was no connection between these two structures in the periphery (Fig. 3). While the thickness of the upper incomplete discoid meniscus was similar to that of the normal meniscus, its mobility was higher. Initially, the central part of the incomplete discoid meniscus was removed, resulting in the classic appearance of a double-layered meniscus and then the upper accessory meniscus was removed (Fig. 4).

After surgery, the patient's pain was completely gone by the end of the 1st month and the full range of motion was achieved at the end of the 6th week. Our patient performed post-operative physiotherapy compatibly and was allowed to do active sports at the end of the 3rd month. The annual follow-ups were carried out, and the patient's 3-year follow-up showed no occurrence of any complications. At the end of the 3rd year, the International Knee Documentation Committee (IKDC) score was 95.

Discussion

Since its first description by Bailey and Blundel in 1974, the presence of a double-layered lateral meniscus has only been reported in 15 cases in the literature [3, 4]. An anatomical study of 437 patients to investigate meniscal abnormalities reported a prevalence rate of 0.5% for a double-layered lateral meniscus [1]. However, in arthroscopic studies involving a larger number of patients, the prevalence rate ranges from 0.06% to 0.09% [5, 6]. Meniscal abnormalities typically present with symptoms such as knee pain, locking, and restricted range of motion. MRI and diagnostic arthroscopy can be used to make a differential diagnosis [7]. Because the MRI appearance of a double-layered meniscus is similar to bucket-handle tears and horizontal meniscal tears, it can be difficult to make a definitive diagnosis based on imaging alone [8]. Therefore, in most cases, a definitive diagnosis is made through arthroscopic examination. In our case, there were findings supporting this view. On examination of the MRI images in our case, a preliminary diagnosis of a horizontal tear accompanying the discoid meniscus could be considered. However, the arthroscopic examination revealed that it was a double-layered meniscus, not a tear. This distinction was made thanks to two important findings. First, the upper meniscus was in an incomplete discoid structure, whereas the lower meniscus was in a normal shape. Second, the posterior part of the accessory meniscus was found to be attached to the normal meniscus, whereas peripheral part lacked any attachment. This observation is compatible with the separated type double-layered meniscus pattern previously reported in the literature [8, 9]. Although incomplete discoid meniscus is one of the most commonly observed

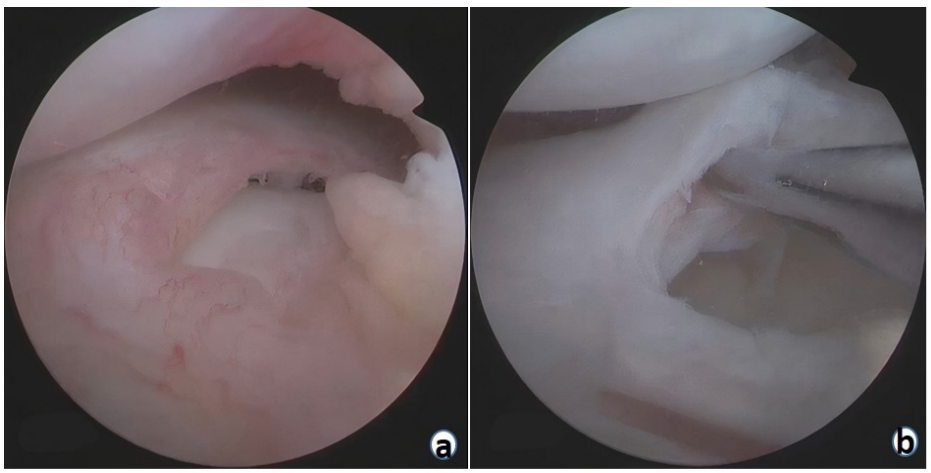

Figure 2: Arthroscopic findings of the knee show an incomplete discoid meniscus with inflammation and central vascularisation (a). Double-layered meniscus view after excision of the central part of the upper meniscus (b).

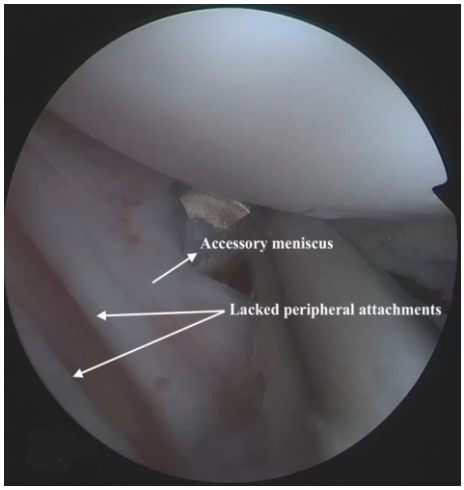

Figure 3: In the periphery, position of the accessory meniscus on the normal meniscus.

Figure 4: The normal meniscus appearance after the removal of the accessory meniscus.

morphological variations, there is limited information in the literature regarding its association with other meniscal abnormalities. The only information available on the relationship between discoid meniscus and double-layered meniscus is a case report by Saygi et al., in which incidentally observed a structure resembling a discoid meniscus beneath the normal meniscus during examination of the lateral meniscus in a patient who underwent surgery for medial meniscus pathology [10]. In our case, the patient presented with lateral meniscus symptoms and an incomplete discoid meniscus was observed lying the normal lateral meniscus.

Conclusions

We recommend arthroscopy for accurate diagnosis and treatment of lateral meniscus pathology when MRI cannot provide a definitive diagnosis. As this case shows, it is important to be aware of the possibility of rare conditions and to perform a thorough examination during arthroscopy to accurately diagnose abnormalities.

Clinical Message

The presence of a double-layered meniscus with an incomplete discoid accessory meniscus, reported for the first time in this case, is a notable abnormality that should be considered in cases of suspected meniscal abnormalities.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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